

**What is claimed is:**

1. A process for producing fibrous monolith components comprising:

5 combining a ceramic powder with a thermoplastic polymer binder and a thermoplastic plasticizer to create a uniformly suspended mixture, the uniformly suspended mixture comprising 50 to 62 volume percent of the ceramic powder, 37 to 50 volume percent of the thermoplastic polymer binder, and 0 to 12 volume percent of the thermoplastic plasticizer;

warm pressing the uniformly suspended mixture into a composite feed rod;

10 extruding the composite feed rod with a computer numerically controlled extruder to produce a fibrous monolith preform;

placing the preform in a binder burnout furnace to remove the thermoplastic polymer binder;

placing the perform in a pressureless sintering furnace to consolidate and densify the preform.

2. The method of Claim 1 wherein the uniformly suspended mixture contains a sintering aid.

3. A process for consolidation and densification of fibrous monolith components comprising:

20 placing a preformed fibrous monolith composite in a sintering furnace, the sintering furnace containing an inert gas and having a pressure in the range of 1 to 30 Psi.

applying energy to the fibrous monolith composite to achieve full density.

4. The process of Claim 3 wherein the fibrous monolith composite comprises  $\text{Si}_3\text{N}_4$ , BN, and a sintering aid.

5. The process of Claim 3 wherein the fibrous monolith composite comprises ZrC and WRe and is heated to at least 2000 Celsius.

5 6. A method for manufacture of an article comprised of a fibrous monolithic material comprising the steps of:

- a) forming a fibrous monolithic material in the form of a filament;
- b) compressing the filament to consolidate the material and densify the material;
- 10 c) forming the compressed filament into a preform of the article; and
- d) sintering the preform in an inert atmosphere at generally atmospheric pressure.